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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,616	02/12/2004	Christian Ziener	GK-OEH-177/500814.20079	4637
26418	7590	01/25/2005	EXAMINER	
REED SMITH, LLP ATTN: PATENT RECORDS DEPARTMENT 599 LEXINGTON AVENUE, 29TH FLOOR NEW YORK, NY 10022-7650			SMITH, JOHNNIE L	
			ART UNIT	PAPER NUMBER
			2881	

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/777,616

Applicant(s)

ZIENER ET AL.

Examiner

Johnnie L Smith II

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0212.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 13-17, and 23-30 are rejected under 35 U.S.C. 102(e) as being anticipated by US patent 6,744,851 (Orisini et al). In reference to claims 1-4, Orisini teaches an arrangement for generating intensive radiation based on a plasma, having a target generator (14) with a nozzle for metering and orientation of a target flow for plasma generation; a vacuum chamber, and a high-energy excitation radiation (24) being directed to the target flow in the vacuum chamber and the target flow being completely converted piece by piece by a defined pulse energy of the excitation radiation into a plasma having a high conversion efficiency for the intensive radiation in a desired wavelength region, wherein the said nozzle of the target generator being a multiple-channel nozzle with a plurality of separate orifices (16), the orifices generating a plurality of target jets, the

excitation radiation for generating plasma being directed simultaneously portion by portion to the target jets (abstract). Orisini further shows the arrangement, wherein the individual orifices of the nozzle are arranged in such a way that a radiation spot focused by the excitation radiation on all of the target jets exiting the nozzle is covered spatially essentially uniformly by parallel target jets, all of the target jets being completely irradiated over their diameter (figure 1), wherein the individual orifices of the nozzle are arranged in at least one row (figure 1), and wherein the individual orifices of the nozzle are arranged in such a way that the target jets fill the radiation spot of the excitation radiation without gaps and without overlapping, wherein the orifices of the nozzle are arranged so as to be offset to the direction of the excitation radiation for target jets appearing adjacent to one another in the radiation spot (figure 2).

3. In reference to claims 13 -16, Orisini shows the said arrangement, wherein a laser beam (24) is provided as excitation radiation, wherein the energy beam has a focus whose cross-sectional area covers the width of all adjacent target jets simultaneously (figure 2), wherein the said Laser (24) is selected from the list of various suitable energy beams listed by applicant (page 7).

4. In reference to claim 17, Orisini shows the said arrangement, wherein the energy beam is focused through suitable optics on the target jets on a focus line which is oriented orthogonal to the direction of the target jets (figure 2).

5. In reference to claims 23-28, Orisini shows the said arrangement, wherein the target jets proceeding from the orifices of the multiple-channel nozzle are continuous jets in the area of the interaction with the excitation radiation, wherein the target jets proceeding from the orifices of the multiple-channel nozzle fall in drops at the latest in the area of interaction with the excitation radiation, wherein the target jets are liquid jets, wherein the target jets are frozen solid jets when exiting from the nozzle into the vacuum chamber, and wherein the target jets are generated from condensed xenon or other desired cryogenic liquid target materials (column 3 line 26-47, abstract).

6. In reference to claims 29 and 30, Orisini shows a method for using the said arrangement described above, having the step of generating plasma-generated radiation in the wavelength regions between soft x-ray radiation and the infrared spectral region or in the wavelength region between 1 nm and 20 nm for devices for semiconductor lithography, particularly for EUV lithography in the region of 13.5 nm (column 1 line 30-24), abstract).

30.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 5-12 and 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent 6,744,851 (Orisini et al). In reference to claims 5-12, Orisini shows a multiple channels or orifices having a relatively essentially uniform arrangement (figure 1), but fails to clearly disclose the use of various nozzle arrangements as being claimed by applicant. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use various orifice configurations, since it has been held that a mere change in shape of an

element is generally recognized as being within the level of ordinary skill in art when the change in the shape is not significant to the function of the combination, *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966). Further, one would have been motivated to select the various shapes claimed for the purpose of having more of a target area, and as stated by Orisini (column 3 lines 58-62) “... *other orifice dimensions may be equally suitable for other designs and application.*”

10. In reference to claims 18-22, Orisini shows the use of a laser (24) and discusses not shown elements such as collection optics, target laser, focusing optics, etc. Orisini fails to teach the use of a plurality of individual energy beams their various arrangements, and optical elements. It would have been obvious to one of ordinary skill in the art to modify the teaching of Orisini and produce multiple energy beams. Such limitations lacks criticality since the reference of Orisini in combination with a beam splitter would function equally efficiently.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The unapplied additional US references, listed on the attached from 892, contain art similar to that being claimed by applicant, more specifically, methods and apparatuses for generating x-ray or EUV radiation and various nozzle configurations.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johnnie L Smith II whose telephone number is 571-272-2481. The examiner can normally be reached on Monday-Thursday 7-4 P.M. and Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 571-272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Johnnie L Smith II

Johnnie L Smith II
Examiner
Art Unit 2881

